

Appln. No. 10/784,406
Response to Final Rejection dated August 10, 2006
Reply to Office Action of March 25, 2006

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A reactive hot melt composition in the form of free-flowing pellets, the composition comprising:

a cross-linkable resin ~~including comprising at least one copolymer of ethylene with an ethylenically unsaturated monomer, the resin including one or more of an ethylene-acrylic acid copolymer, an ethylene-methacrylic acid copolymer, having a melt flow rate, when measured according to ISO 1113, of more than 100 g/10 minutes at 190°C and 2.16 kg, and an ethylene-acrylic acid-methacrylic acid terpolymer; at least one or more additional copolymers of ethylene with an ethylenically unsaturated monomer;~~

from about 10 to about 30 percent based on the total weight of the composition, of an adhesion promoter for providing adhesive properties to the composition at temperatures of about 50 to about 100°C, wherein the adhesion promoter comprises at least one of a plasticizer and a tackifier;

a free radical cross-linking initiator having a 1 hour half-life temperature of from about 110°C to about 170°C; and

a foaming agent;

wherein the composition is such that it can be melted and extruded on to a substrate at a temperature of from about 90°C to about 120°C without curing, and can be cured at a temperature of from about 120°C to about 200°C.

2. (Original) A composition as claimed in Claim 1, wherein the said resin constitutes from about 37 to about 60 percent based on the total weight of the composition.

Claims 3 and 4 (Cancelled).

5. (Original) A composition as claimed in Claim 1, wherein one or more of ethylene-acrylic acid copolymer, ethylene-methacrylic acid copolymer, and ethylene-acrylic acid-methacrylic acid terpolymer is present in an amount of from about 10 to about 40 percent based on the weight of the total composition.

6. (Original) A composition as claimed in Claim 1, wherein the free radical cross-linking initiator is a peroxide.

7. (Original) A composition as claimed in Claim 3, wherein the adhesion promoter comprises both a plasticizer and a tackifier.

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8. (Original) A composition as claimed in Claim 1, wherein the resin comprises one or more of a terpolymer containing acrylate and/or methacrylate units, a maleic anhydride grafted elastomer, an ethylene-acrylate-glycidyl methacrylate polymer, an ethylene-acrylate-maleic anhydride polymer, an ethylene-vinyl acetate-maleic anhydride polymer, an ethylene-vinyl acetate copolymer, an ethylene-methylacrylic ester copolymer, an ethylene-ethylacrylic ester copolymer, a ethylene-butylacrylic ester copolymer and a rubber.

Claim 9 (Cancelled).

10. (Original) A composition as claimed in Claim 8, wherein one or more of the methacrylate- and acrylate-containing copolymers or terpolymers is present in a total amount of up to about 30 percent, based on the total weight of the composition.

Claims 11 and 12 (Cancelled).

13. (Original) A composition as claimed in Claim 1, wherein the foaming agent is present in an amount of from about 0.1 percent to about 4 percent by weight, based on the total composition.

14. (Original) A composition as claimed in Claim 13, wherein the composition expands from about 150 to about 250 percent on curing.

15. (Currently Amended) A reactive hot melt composition in the form of free-flowing pellets, the composition comprising:

- a) from about 37 to about 60 percent based on the total weight of the composition of a cross-linkable resin including one or more of an ethylene-acrylic acid copolymer, an ethylene-methacrylic acid copolymer, and an ethylene-acrylic acid-methacrylic acid terpolymer having a melt flow rate, when measured according to ISO 1113 of more than 100g/10 minutes at 190°C and 2.16 kg and at least one additional copolymer of ethylene with an ethylenically unsaturated monomer;
- b) from about 10 to about 30 percent based on the total weight of the composition of an adhesion promoter for providing adhesive properties to the composition at temperatures of from about 50°C to about 100°C, wherein the adhesion promoter comprises at least one of a plasticizer and a tackifier;
- c) from about 0.5 to about 3 percent based on the total weight of the composition of a free radical crosslinking initiator having a 1 hour half-life temperature of from about 110°C to 170°C; and
- d) from about 10 to about 40 percent based on the total weight of the composition of a filler; ~~wherein component a) includes one or more of an ethylene-acrylic acid copolymer, an ethylene-methacrylic acid copolymer, and an ethylene-acrylic acid-methacrylic acid terpolymer, and~~
- e) from about 0.1 to about 4 percent based on the total weight of the composition of a foaming agent;

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wherein the composition is such that it can be melted and extruded on to a substrate at a temperature of from about 90°C to about 120°C without curing, and can be cured at a temperature of from about 120°C to about 200°C.

16. (Currently Amended) A reactive hot melt composition in the form of free-flowing pellets, the composition comprising:

a cross-linkable resin including ~~comprising at least one copolymer of ethylene with an ethylenically unsaturated monomer, the resin including one or more of an ethylene-acrylic acid copolymer, an ethylene-methacrylic acid copolymer, and an ethylene-acrylic acid-methacrylic acid terpolymer; having a melt flow rate, when measured according to ISO 1113, of more than 100 g/10 minutes at 190°C and 2.16 kg and at least one or more additional copolymers of ethylene with an ethylenically unsaturated monomer;~~

from about 10 to about 30 percent based on the total weight of the composition, of an adhesion promoter for providing adhesive properties to the composition at temperatures of about 50°C to about 100°C, wherein the adhesion promoter comprises at least one of a plasticizer and a tackifier;

a free radical crosslinking initiator having a 1 hour half-life temperature of from about 110 to about 170°C; and

a filler;

wherein the composition is such that it can be melted and extruded on to a substrate at a temperature of from about 90°C to about 120°C without curing, and can be cured at a temperature of from about 120°C to about 200°C.

17. (Previously Presented) A method of preparing a pelletized reactive hot melt composition adhesive composition as claimed in Claim 1 or Claim 15, comprising:

compounding the components of the composition; and

pelletizing the resulting composition to produce a dry free flowing material.

18. (Previously Presented) A method as claimed in Claim 17, wherein the components are compounded at a temperature of less than about 150°C.

19. (Previously Presented) A method of adhering a first component to a second component, comprising the steps of melting a composition as claimed in Claim 1 or Claim 15 at about 90°C to about 120°C, contacting the first and second components with the melted composition; and applying heat to cure the composition at a temperature of about 120°C to about 200°C.

20. (Previously Presented) A composition according to Claim 7 wherein the tackifier is present in an amount of about 7 to about 21 percent and the plasticizer is present in an amount of about 2 to about 7 percent by weight based on the total composition.

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Claim 21 (Cancelled).

22. (Previously Presented) A composition according to Claim 21 which cures at a temperature of from about 140°C to about 200°C.

23. (Previously Presented) A composition according to Claim 16 wherein the adhesion promoter comprises both a plasticizer and a tackifier.

24. (Previously Presented) A composition according to Claim 23 wherein the tackifier is present in an amount of about 7 to about 21 percent and the plasticizer is present in an amount of about 2 to about 7 percent by weight based on the total composition.

Claim 25 (Cancelled).

26. (Previously Presented) A composition according to Claim 25 which cures at a temperature of from about 140°C to about 200°C.

27. (Previously Presented) A method according to Claim 19 wherein the composition is cured at about 140°C to about 200°C.

Claims 28-33 (Cancelled).

34. (New) A reactive hot melt composition according to Claim 1 wherein an ethylenic-acrylic acid copolymer is present in the resin.

35. (New) A reactive hot melt composition according to Claim 1 wherein melt flow rate of the ethylene-acrylic acid copolymer, ethylene-methacrylic acid copolymer, or ethylene acrylic acid methacrylic acid terpolymer is 300 to about 1,300.

36. (New) A reactive hot melt composition according to Claim 1 wherein the pellets are coated with a powder comprising a filler applied in an amount of from about 0.2 to about 2 percent based on the weight of the composition.

37. (New) A reactive hot melt composition according to Claim 34 wherein the additional copolymers of ethylene with an ethylenically unsaturated monomer comprises ethylene vinyl acetate.

38. (New) A reactive hot melt according to Claim 37 wherein the additional copolymers of ethylene with an ethylenically unsaturated monomer is present in an amount of up to 25 percent by weight based on the total composition.

39. (New) A reactive hot melt composition according to Claim 15 wherein an ethylenic acrylic acid is present in the resin.

40. (New) A reactive hot melt composition according to Claim 15 wherein melt flow rate of the ethylene-acrylic acid copolymer, ethylene-methacrylic acid copolymer, or ethylene acrylic acid methacrylic acid terpolymer is about 300 to about 1,300.

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41. (New) A reactive hot melt composition according to Claim 15 wherein the pellets are coated with a powder comprising a filler applied in an amount of from about 0.2 to about 2 percent based on the weight of the composition.

42. (New) A reactive hot melt composition according to Claim 39 wherein the additional copolymers of ethylene with an ethylenically unsaturated monomer comprises ethylene vinyl acetate.

43. (New) A reactive hot melt according to Claim 42 wherein the additional copolymers of ethylene with an ethylenically unsaturated monomer is present in an amount of up to 25 percent by weight based on the total composition.

44. (New) A method according to Claim 17 which further comprises coating the pellets with a powder comprising a filler.